

Abstract Submitted  
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**Using Electrospray to Probe the Interfacial Flow of Evaporating Fluid Masses**<sup>1</sup> PAUL CHIAROT, AREF GHAFOURI, TIMOTHY SINGLER, XIN YONG, SUNY at Binghamton — The ability to measure flow along the surface of an evaporating fluid mass remains a challenge. Tracers are typically dispersed throughout the bulk of the fluid, which means the interfacial transport cannot be easily isolated using particle imaging techniques. In this research, nanoparticles, acting as Lagrangian tracers, are delivered to the interface of sessile drops and rivulets using electrospray atomization. The microdroplets produced by electrospray evaporate in-flight, which leaves behind dry particles that adsorb at the target interface and do not desorb into the bulk. Using this technique, we captured the flow induced on the surface of the fluid masses during evaporation. The flow structure changed dramatically when surfactant was present or if the bulk solvent was a binary (water / alcohol) solution. For these cases, solutal Marangoni flow was induced along the fluid interface, producing flow patterns that were significantly altered from the pure (aqueous) solvent case.

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